

**ISSUES IN DESIGNATING
URBAN GROWTH AREAS**

PART I

***"PROVIDING ADEQUATE URBAN
AREA LAND SUPPLY"***

**State of Washington
Department of Community Development
Growth Management Division**

March 1992

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Introduction (Or Vacant Land is Where the Action Is) _____

The Washington Growth Management Act (GMA) establishes a framework for coordinated and comprehensive planning to help local communities manage their growth in a manner which makes sense for each community. The GMA calls for urban growth areas where growth will be encouraged and can be supported with adequate facilities. At the same time, it encourages setting aside other areas for rural uses and resource protection. Establishing these urban growth areas is a major step local communities will take in managing their growth. Local communities must design urban growth areas to include "areas and densities sufficient to accommodate the county's expected growth for the succeeding 20 years" (GMA, Section 12, RCW 36.70A.120). Communities will then review and revise their plans every ten years to assure that projected growth for the next ten years can be accommodated. To provide for this growth, local communities will need a thorough understanding of what land is realistically developable, available, and suitable for growth within their communities.

The Comprehensive Plan's Foundation, "A Land Use Inventory Guide" (available in 1992) prepared by Fred Hurand for the Washington State Department of Community Development, explains how to conduct a land use inventory. Your inventory will provide you with information about how land is currently used in your community. Of particular importance, it will show you which lands are vacant or not being fully used. This guidebook focuses on one specific and very important category of information collected as a part of the land use inventory. It explains a process for analyzing vacant land supply and matching supply with anticipated growth needs. It provides methods which can be used by large and small communities alike.

In planning for future growth and development, vacant land or redevelopable land is where the action is. Having adequate land supply within the urban growth area is key to meeting the GMA's requirement for 20-year growth projections. It is also key to the overall success of your community's growth management program. Drawing the urban growth boundary involves a delicate balance. Too much land within the urban growth area may contribute to continued urban sprawl. Too little land can result in increased land and housing costs.

Research indicates that, in some cases, urban growth area limitations may have contributed to increased housing costs. However, it is difficult to separate out the effects of the growth itself from the effects of the growth boundaries on housing costs. Furthermore, "growth management policies need not contribute to land and housing price inflation through over-constraining land supply [if] jurisdictions that control growth . . . maintain supplies of available land large enough to allow for a competitive market" (Godschalk, Bollens, Hekman, and Miles).



Portland, Oregon is a good example of a community that has established urban growth boundaries while maintaining reasonable housing costs. John Kelly, of Oregon's Department of Land Conservation, attributes Portland's success to maintaining higher average urban densities in addition to maintaining adequate land supply.

Expect that the development community will be watching carefully when it comes to vacant land assumptions. They will want reassurance that sufficient land supply is provided to allow for flexible choices and to avoid increased housing costs.

Equally important is the need to avoid too large of an urban growth area which can contribute to sprawl and increased service costs. For instance, the Twin Cities metropolitan area in Minneapolis lacks natural geographic features which might contain development and found development "spill(ing) out in all directions." As a result of the spread out, sprawling, low-density development patterns, "cities were forced to build facilities (sewer trunks in particular) at tremendous expense for scattered pockets of urban development" (Terry Jill Lassar, Urban Land Magazine, February 1991).

In response, the Metropolitan Council drew an urban services boundary to confine the amount of area where urban services would be provided and urban development would be encouraged.

The City of Portland's initial urban growth areas boundary proved overly generous. A Portland area study found that after half of the first 20-year planning period had passed, Portland still had a land supply adequate to accommodate another 20 year's growth. The goal, then, is to strike a balance between too much or too little urban land supply.







Vacant lands will also provide opportunities for meeting key community goals including:

- ◆ open space acquisition;
- ◆ siting of important community facilities;
- ◆ protecting rural and environmentally sensitive areas; and
- ◆ conserving resource lands.

This guidebook will provide you with helpful hints and basic steps on how to provide adequate land supply to accomplish your growth management objectives while avoiding undesirable side effects.

The Basic Steps (Or, How to Get From Here to There) _____

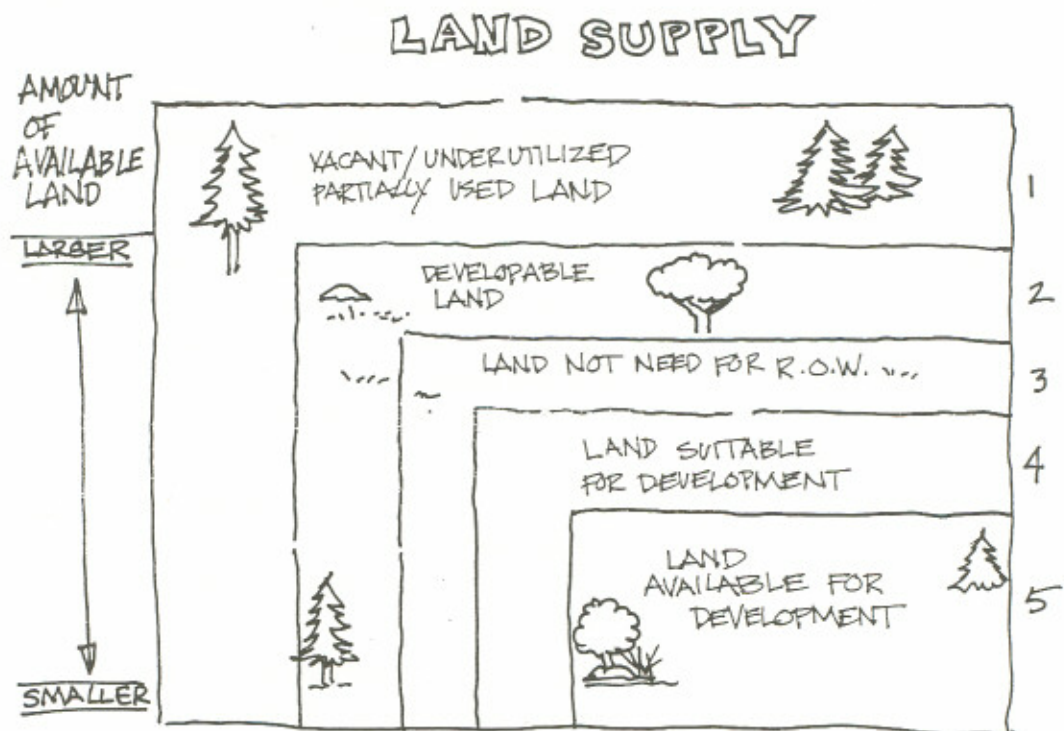
There are eight basic steps suggested for providing adequate urban area land supply for your community. The following sections will explain each of these steps in greater detail.

1. **Identify lands which are potential candidates to accommodate future growth--vacant, partially-used, and under utilized land** (in other words, subtract all parcels committed to other uses). 
2. **Subtract all parcels that your community defines as not developable because of physical limitation.** For instance, once you have identified critical areas, such as wetlands, and have established plan policies and regulations prohibiting development in these areas, subtract these areas from the initial land supply pool. 
3. **Subtract lands which will be needed for other public purposes.** This includes utility corridors, landfills, sewage treatment plants, recreation, schools, and other public uses (GMA, Section 15, RCW 36.70A.150). 
4. **Subtract all parcels which your community determines are not suitable for development for social and economic reasons.** For instance, if you have adopted plan policies and regulations protecting historic districts or certain agricultural lands, or if from a market standpoint the land is not likely to develop within 20 years, subtract these from land supply. 
5. **Subtract all parcels which you assume will not be available for development within your plan's 20-year timeframe.** Assume that a certain percent of vacant, under-utilized, and partially-used lands will always be held out from development. 
6. **Build in a safety factor.** If you are unable to monitor land supply on a regular basis, consider building in a safety factor of land in addition to your projected 20-year land area needs to assure adequate availability and choice at all times. 
7. **Determine total capacity.** After determining desirable densities and land uses for various areas within your jurisdiction, multiply the number of acres in remaining parcels by the number of units per acre allowed in the area where the parcel is located. Add together to determine total capacity of vacant, under-utilized, and partially-used land.
8. **Draw the urban growth boundaries for your jurisdiction which meet criteria you have set.** Include enough developable, suitable, and available vacant, under-utilized or partially-used land area to meet your share of projected growth.

Counties planning under the GMA will be given a 20-year population forecast by the Office of Financial Management. These population estimates should be used by these counties and the cities within them to designate their urban growth areas. Each of these counties will need to work with the cities in their jurisdiction to distribute the population forecast among the various jurisdictions. Counties and the cities within them must accommodate at least the population forecast by the Office of Financial Management (GMA, Section 11, RCW 36.70A.110).

The county, in conjunction with its cities, can set aside a portion of their population forecast for new fully-contained communities outside the urban growth areas if they meet certain criteria (ReSHB 1025, Section 16).

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Step 1: Vacant Land (What It Is, What It's Not)

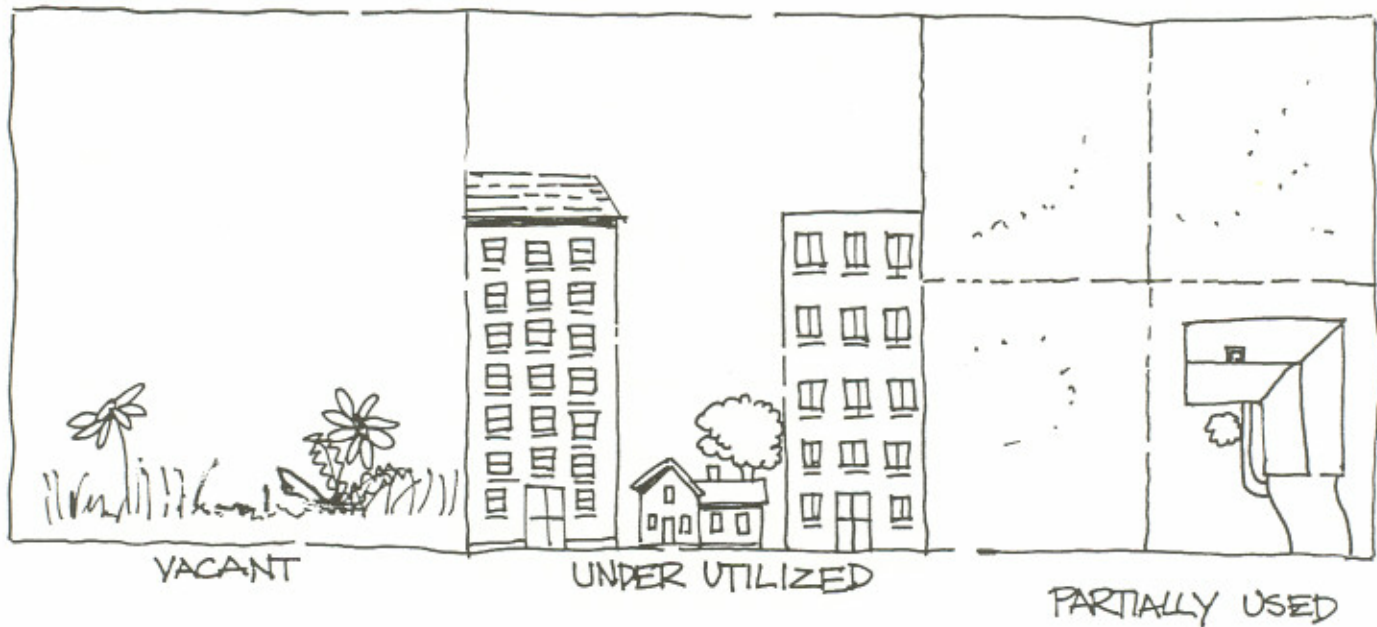
"When I use a word, Humpty Dumpty said . . . , it means just what I choose it to mean--neither more nor less."

- Lewis Carroll, *Through the Looking Glass*

Three land use categories are of key importance in estimating the land supply which can accommodate future growth--vacant, partially-used and under-utilized land.

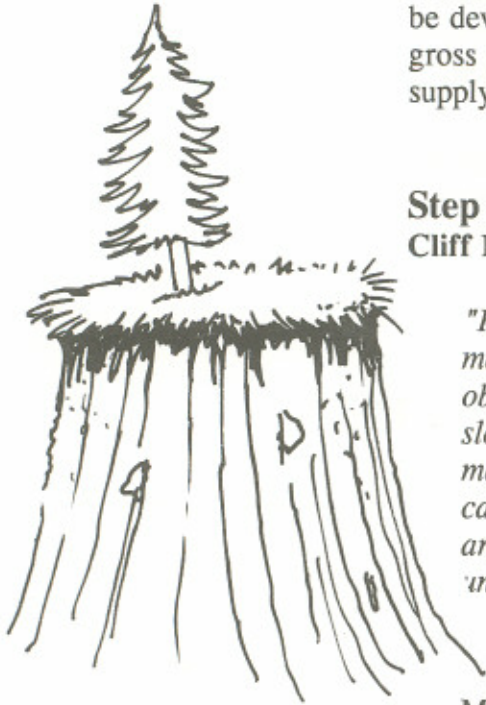
- ◆ **Vacant land** is defined as land which has no structure or has a building improvement value of less than \$500. This means that land which is occupied by a shack, abandoned building or other very low-value improvement will be considered vacant.
- ◆ **Partially-used** parcels are those occupied by a use which is consistent with zoning but contains enough land to be further subdivided without need of rezoning. For instance, a single house on a ten acre parcel, where urban densities are allowed, is partially developed.
- ◆ **Under-utilized** parcels are those zoned for more intensive use than that which currently occupies the property. For instance, a single-family home on multifamily zoned land will be considered under-utilized.

POTENTIAL CANDIDATES FOR LAND SUPPLY



Note that you will probably want to treat land which is committed to a future use similarly to land already developed. Land which has an approved building or subdivision permit will likely be held until developed with uses allowed at the time of permit approval. In Washington, land can be developed consistent with the building permit and subdivision regulations in effect at the time a "fully completed" application is submitted (see RCW 19.27.095 and 58.17.033).

Even though we may classify land as vacant, partially used, or underutilized, it is not necessarily developable, suitable, or available for future development. In addition to simply collecting information about the gross amount of these vacant land categories, each jurisdiction will need additional information to evaluate whether all these lands realistically will be developed. The next sections provide suggestions and steps for refining gross vacant land information to develop a more realistic estimate of land supply which can meet future growth needs.



Step 2: Determine Land Development Limitations (Or No Cliff Hangers, Please)

"Rarely do we find data that can be used in a truly objective manner; most data requires our interpretation . . . There is no objective, preordained law that says sites in excess of ten percent slope must never be selected for shopping centers. We have to make a subjective judgment and say that, because it is economically and environmentally disruptive to build a shopping center in areas with slopes in excess of ten percent, such areas are undesirable as shopping center."

- Larz T. Anderson

Many communities have both inventoried vacant land and evaluated whether there are physical constraints to development on those lands. Although communities frequently map and consider natural (environmental/hazard) constraints, they less frequently evaluate the potential availability and capacity of infrastructure which can serve vacant lands. Both environmental and infrastructure constraints constitute very real limitations for land development.

Many different factors can be considered development limitations. Stuart Chapin defines vacant land as marginal for development which is "incapable for building without extensive preparation or modification," including lands which are too low (wetlands and lands subject to flooding), too derelict (hazards produced by human activities such as abandoned mines), or too steep. To this list, others add surface drainage, soil bearing capability, suitability for septic tanks, susceptibility to erosion, landslide, or other natural hazards. Roads, water supply, drainage, and sanitary sewer may be the four most important infrastructure limitations for development.

The GMA and Minimum Guidelines Provide Guidance for Development Limitations

The GMA and Chapter 365-190 WAC, "Minimum Guidelines to Classify Agricultural, Forest, Mineral Lands and Critical Areas," provide local communities with a good starting point for determining which vacant lands should be considered unbuildable. The GMA (Section 2, RCW 36.70A.020) states the goal that public facilities and services be "adequate to serve the development at the time the development is available for occupancy and use without decreasing current service levels below locally established minimum standards." Public facilities include streets, roads, highways, sidewalks, street and road lighting systems, traffic signals, domestic water systems, storm and sanitary sewer systems, parks and recreation facilities and schools. Public services include fire protection and suppression, law enforcement, public health, education, recreation, environmental protection, and other governmental services.

Section 17 of the GMA (RCW 36.70A.170) requires each county and city to designate certain resource lands and critical areas. Section 21 of the GMA amendments (ReSHB 1025) adds the further requirement for each county and city to adopt development regulations that "protect critical areas." Critical areas defined in the GMA include the following areas and ecosystems:

- ◆ wetlands;
- ◆ critical recharge areas (for potable water);
- ◆ fish and wildlife habitat conservation areas;
- ◆ frequently flooded areas; and
- ◆ geologically hazardous areas such as those susceptible to erosion, sliding, earthquakes, or other geological events (the minimum guidelines call out volcanic, seismic, mass wasting, debris flows, rockfalls and mine hazards, as "other geological events").



These areas have been defined as critical for different qualitative reasons. Some are critical because of the hazard they present for public health and safety; others because of the values they represent for the public welfare. In some cases, the public risk can be mitigated or reduced by engineering and design; in other cases, the only solution is avoidance.

Defining the Limitations on Land Development, Is in Part, a Local Decision

Different actions may be appropriate in different situations to address the critical area concerns. The comprehensive analysis many communities undertake to evaluate physical limitations augments the "science" of the decision-making process. However, defining the limits of land development still depends, in part, on values which will vary from community to community. For example, the GMA requirement to "protect critical areas" does not mean an across the board prohibition of development in critical areas.

The GMA has given local jurisdictions considerable latitude in considering local circumstances and determining how these critical areas should best be protected. Undevelopable lands, then, are those lands where local critical area adopted policies and regulations prohibit development. Undevelopable lands are also unlikely to be developed within the next 20 years because necessary infrastructure is not available, and cannot be provided at a reasonable cost within that time frame. Note that some areas, which may not be developable for the short-term because of infrastructure limitations, may become feasible for development in the future when public facilities are extended. In other areas, barriers to service extension may exist which means the area can never be served at a reasonable cost.

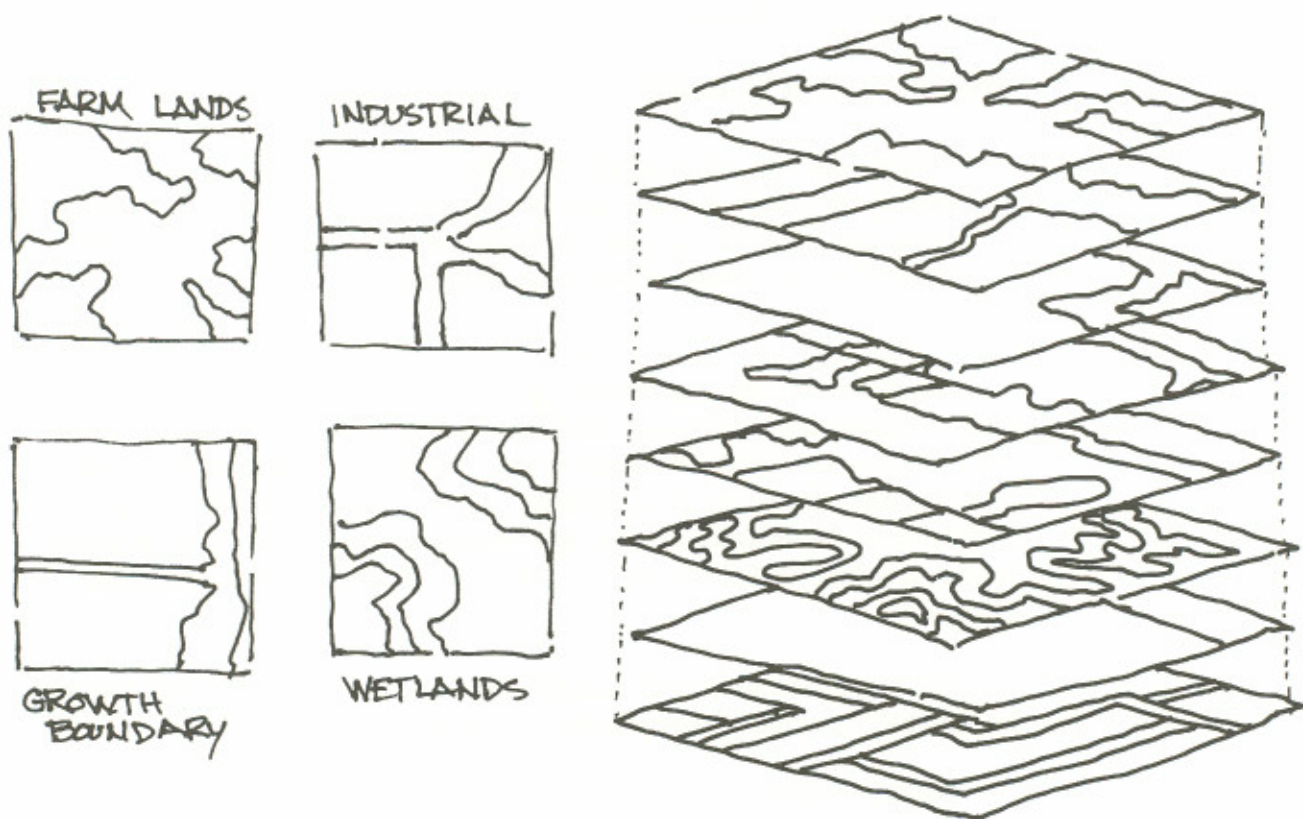
Local communities can and should plan the extension of public facilities into urban growth areas which may not currently be served with the full range of facilities and services. However, areas which cannot feasibly be served within the next 20 years should not be considered a part of the urban area supply. In addition to service availability, it is crucial to look at the capacity of infrastructure systems. Although there may be a waterline to the site, line size or pressure may be inadequate to serve cumulative development planned for the area. This may delay when a site could be ready for development. This is a particularly important factor when considering up-zoning to encourage infill development.

Communities have balanced their goals for protecting critical areas and achieving efficient densities within their urban areas through different approaches. Bellevue, for instance, has established certain criteria for when it may be appropriate to allow development within "protected areas." The criteria assure that the development can be accomplished without sacrificing the critical area values. Using a different approach, King County has defined a certain amount of development which may be acceptable within "sensitive areas" while still achieving sensitive area protection objectives. (See Appendices A and B for excerpts from these sensitive areas ordinances.)

McHarg's Method Can Help Sort Out Undevelopable Land

A map overlay method, developed by Ian MchHarg, is a simple and effective way to identify unbuildable lands based on critical area criteria. Separate maps of wetlands, steep slopes, and other critical areas can be prepared and overlaid. You can choose to eliminate all shaded areas or only darker areas from the pool of potential future developable land, depending on the importance you place on the individual or composite values. (For more detail on MchHarg's technique, see his classic book, Design With Nature, Natural History Press, 1969.)

You may wish to follow a two-step process to weed out inappropriate development sites. Begin by screening out the lands which your policies define as inappropriate for development. For instance, you may wish to eliminate all wetland and hazard areas. Then take a second cut, overlaying the remaining values, and develop a composite rating for each land area. Once again, the "darker" areas will fall out of the pool of potential developable land, or you may choose to keep these in the pool of developable lands but apply different assumptions about the density or design of development in these areas as Bellevue and King County have done. If greater sophistication is desired, you can assign weights or points to define the relative importance of each resource value before preparing a final composite rating. Where available, a computerized geographic information system can be used to overlay resource values and conduct the same analysis.



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Step 3: Lands for Public Purposes (Should Also be Subtracted from Land Supply)

An additional step is important toward getting a good handle on developable land. Land area which will be needed to support future roads and utilities will not be available for residential development. Section 15 of the GMA (RCW 36.70A.150) states that counties required to plan under the GMA "identify lands useful for public purposes such as utility corridors, transportation corridors, landfills, sewage treatment facilities, recreation, schools, and other public uses."

If this information is not available at the time you are calculating the amount of land needed for your urban growth area, then follow this rule of thumb. Assume that 17 to 30 percent of the total vacant land designated from urban use will be needed for rights-of-way when major roads are not in place. Between 17 to 22 percent is a typical range, as found in communities such as Lynnwood, Kent, and Wenatchee. Percentages as high as 27 to 30 percent (or more) occur in cities such as Seattle where alleys are used, public parking lots and tall buildings are present, and blocks are small. In infill situations, where the basic road network is already in place, five to 12 percent of the net land area will likely be needed for rights-of-way. In rural designated areas, assume five to ten percent will go into rights-of-way. Use the higher percentages where residential development is likely rather than resource use. For instance, the unincorporated planning area around Enumclaw has about five percent of its land use in transportation land uses.

Step 4: Land Suitability (Or Does It Fit the Bill?)

"Since land use planning is concerned with the provision of appropriate and adequate land for different users, we need information about the suitability of land for different activities, and the amount, ownership and development pressure on it."

- Hok Lin Leung

After determining that the site is developable (free of significant environmental constraints and capable of being served by adequate public services) the next question to ask is how suitable or appropriate is a site or group of sites for urban development. Larz T. Anderson defines land suitability as "a measure of how appropriate a specific site is for a specific land use, when judged on the basis of social acceptability or economic criteria."

There are several sets of reasons why a site or group of sites may not be suitable for urban development, including:

- ◆ market/economic;
- ◆ locational suitability; and
- ◆ other local policy reasons.

Certain economic factors may make it unlikely that developers will choose to invest and develop given properties within the community plan's 20-year timeframe. Efforts to encourage infill development can be stymied if developers back away from investing in a deteriorated neighborhood. Although we may hope to see these areas developed eventually, it is important to reach a realistic estimate of our effective land supply. Therefore, it is advisable to take a hard look at whether the land will

likely be attractive to private sector development in the near future without government intervention. (There are a number of things jurisdictions can do to encourage investment, described in a following section.)

Land suitability is also a factor of the location and convenience needs of a given use. We need to look at whether various locations are appropriate for various urban uses based on general location principles. For instance, higher density residential development should have good access to major employment centers, shopping, and leisure opportunities. Some commercial or industrial use may need to locate near other complementary or supporting business uses.

Perhaps the most important set of suitability factors to consider comes from your unique package of local community policies. For instance, if your community has inventoried, identified, and developed policies and regulations to protect certain valued resources such as historic districts, areas with prime agricultural soils, lands with exceptional recreational, open space or scenic values, or areas with existing affordable housing stock, remove these areas from the pool of lands suitable for urban area uses.

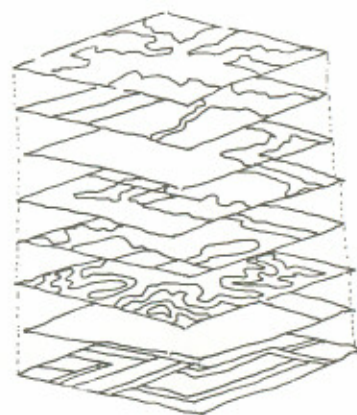
McHarg's Method Is Also Useful to Help Sort Out Unsuitable Lands

The McHarg map overlay method described on page 7 can be used in a similar way to evaluate social/economic suitability criteria as well as the more obvious physical criteria. For instance, maps of prime agricultural soils, other resource lands, historic sites, and lands identified for open space protection can be prepared and overlaid.

Again you may wish to follow a two-step process to weed out inappropriate development sites. Begin by screening out the lands which fail to meet your bottom line or absolute criteria for policy acceptability. For instance, you may wish to eliminate all Class I soils areas and all areas currently designated as historic landmarks or districts. Then take a second cut, proceeding as described in the previous section. This type of process can be used even where information is not mapped. Again, this analysis can be done manually or more quickly with a computerized Geographic Information System.

Step 5: Land Availability (Or What You See Is Not Always What You Get)

Although vacant, partially-developed and under-utilized land may be suitable for development, it may not be available. In fact, a certain percentage of these lands may never be available for development. Very few jurisdictions currently attempt to verify whether land is actually



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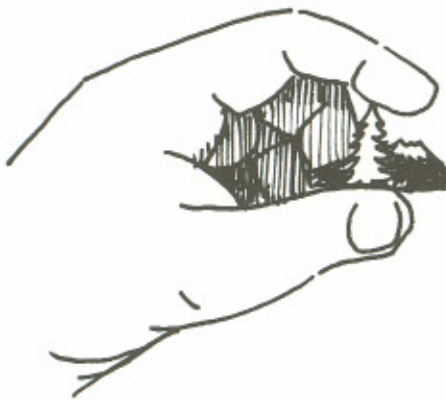
available because information about land availability is difficult to obtain and confirm. It is important to evaluate land availability to establish an urban growth area which provides a good match between land supply and demand.

According to surveys by the Real Estate Research Council (RERC), vacant, partially-used, and under-utilized land is held from development for many reasons, including:

- ◆ investment;
- ◆ future expansion; and
- ◆ personal use.

These need to be considered in addition to the many reasons described earlier, such as lack of infrastructure or other developability/suitability reasons. The most frequent reason for holding property, according to survey respondents, is for investment reasons. One-half to three-quarters of the respondents believe that the market will improve over the next five years for their property. Many of these properties may soon become available if property owner expectations are met. However, the larger the supply of such property, the less likely their price expectations will be met in the short-term. Vacant land is also commonly held for personal use when located next to a residential area to provide extra yard space. These properties are less likely to be available in the near future unless conditions change.

How Much Land Is Likely to Be Available?



The amount of land available can be expected to vary from community to community with local conditions and different pressures for growth. A number of studies indicate that a significant amount of land supply capacity will become available from lands which are redeveloped at greater density. In the RERC survey, which covered a number of different communities, half of the vacant infill parcels surveyed were expected to be on the market within five years. (The figure for King County was 51 percent.) Stockton, California conducted a random survey of vacant landowners to estimate land available over the next ten years. A similar amount of land, just under 50 percent, was expected to be available. Perhaps of greater interest is the fact that just under 77 percent of the vacant land in high demand (urban growth areas) would be available, while just under 27 percent would be available in low demand areas within ten years. Vacant land inventories conducted in Seattle and King County indicate that even when an urban area appears fully-developed, it is likely that ten percent of the total land area will still be vacant.

Less research has been done on how much partially-used or under-utilized land is likely to develop over time. A limited study of plats approved in a high growth area in King County found that one-third of acreage subdivided between 1987 to 1989 came from partially-used or under-utilized parcels. King County staff concluded that if current pressures continue over a 20-year period, it is not unlikely that 70 percent of the under-utilized/partially-used land in this area would be available for development within the next 20 years. A lower percentage is likely where development pressures are less intense or where land supply is much greater than demand.

A number of Washington communities are searching for simple assumptions to estimate how much under-utilized land is likely to convert to a fully-utilized status. Some communities have explored the possibility that a parcel with a land value which exceeds the value of the building and other improvements on that parcel would likely redevelop. Others have assumed that multifamily zoned land occupied by single-family dwellings will, over time, convert to the allowed multifamily use.

While these types of assumptions tend to be true, more detailed studies by communities such as Seattle and Redmond show that the only rule of thumb is that there is no rule of thumb! These studies indicate that you really need an accurate sense of local market conditions, policies, and values to predict redevelopment potential. For instance, Seattle looked at the ratio of a property's land value divided by the property's value of building and site improvements as a predictor for when the property might redevelop. They found that the ratio at which the property was likely to redevelop varied from one neighborhood to the next. It is, therefore, unlikely that any one ratio can be used to predict redevelopment for a large number of communities. Steve Pierce of the Seattle Office of Long-Range Planning found that in some neighborhoods, multifamily zoned land occupied by single-family dwellings was not at all likely to convert. In others, conversion is highly likely. The Redmond Downtown Developable Area Study, done by Hudson Business Consultants in 1988, found that local zoning, which is not well related to actual demand, can also hamper redevelopment efforts.

Several Methods Are Suggested for Estimating Land Availability

Because there are so many unknowns when it comes to land availability, we will never have a definitive answer. The above information can be used to construct assumptions about how much of the vacant/under-utilized/partially-used land supply will be available during the plan time frame. However, to gain a truer picture on the amount of land supply which can be expected to be available, an understanding of unique

local conditions is of key importance. Several other methods can help refine our understanding of local conditions, development, and redevelopment potential:



- ◆ For smaller communities, it may be possible by consulting local realtors, permit officials, clerks, and others intimately familiar with local development activity.
- ◆ Another is to conduct a random survey of landowners of vacant/under-utilized/partially-used land about their intentions to sell or hold their land. The survey will be most useful if it is ranked by zoning and subareas experiencing different development pressures. This method may be most useful in small or medium-size communities. (See Appendix B for sample questions which could be used in such a survey.)
- ◆ A "higher tech" aid for communities with automated land use information systems would be to link up with multiple listing files. These files can be used to provide an estimate of how much vacant and under-utilized/partially-used land is on the market at a given time and to compare it with projected demand for the same period.
- ◆ Larger communities may find it worthwhile to conduct a more detailed study, considering multiple factors such as zoning, local development regulations, development costs, land values, adjacent uses, and neighborhood differences to predict redevelopment potential within different parts of the community.

Several additional "tips" are useful in estimating land availability:

- ◆ Your estimates of vacant land development potential should be broken down by zoning category to be sure that each type of projected housing need is being adequately met.
- ◆ Tracking current development approvals and in-process development and subtracting it from total land supply, will allow you to look at whether your estimates are on target. Developments in process are contributing toward meeting your original total projected demand. However, if you are not getting densities allowed by the plan, you may need more land than originally anticipated to meet projected growth. Tracking current development will allow you to adjust densities or land supply to reach your goals.
- ◆ Unexpected increases in land costs can be an indication of inadequate land supply. Monitoring land costs can alert you to a situation which may need adjustment. However, a word of caution is in order. Many factors contribute to the cost of land and housing, including a rate of

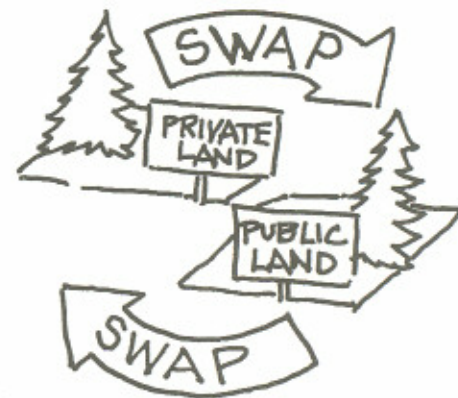
growth which outstrips the ability of the building industry to keep up. Land/housing costs should be used as only one of a set of indicators that adjustment is needed.

- ◆ Accuracy of demand projections can be increased by using a range with different variables.

Communities Can Enhance Land Availability Within Urban-Designated Areas

You can increase the likelihood that vacant land will be available within urban areas and promote efficient development using a number of approaches:

- ◆ Governmental agencies hold a surprisingly high percentage of vacant lands (RERC studies, reported in Infill Development Strategies, indicate 15 to 25 percent). Communities are sometimes unaware of all the lands they own which may have been acquired through tax delinquency, donation, or land banking (advance acquisition of land as sites for future public uses). Communities can inventory and evaluate their lands and dispose of unneeded properties to someone committed to develop the properties. Other public agencies such as school districts may also hold parcels ideally suited for development. Communities may wish to take a more active role in promoting infill development by acquiring and assembling them in to larger pieces which are more attractive for development.
- ◆ A related action is to swap publicly-owned land for other parcels where it would mutually benefit the public and developers.
- ◆ In urban areas, communities can tax residential-zoned vacant land at rates based on permitted rather than current use as a disincentive for holding land. One caution in designing a tax, it may hurt those who would like to sell but are located in an area with a depressed market.
- ◆ Consider also rezoning other uses, such as industrial or commercial land, where an over-supply exists. (The RERC cites studies in the San Francisco area which showed that only 36 percent of the industrial-zoned land was projected to be needed for the next 20 years.) Industrial land supply should relate to what level your projected population can support at full buildout. However, because it is difficult to assemble adequate-sized parcels in desirable locations for industrial development and because people may commute into the community to work, allowances for excess industrial land may be necessary.
- ◆ These other techniques can be supplemented by incentives for infill development, including code changes which allow higher densities, establish minimum densities, provide infrastructure improvements, grants, and/or other incentives.



Step 6: Provide Additional Land Area Where Uncertainty is High

"First and foremost, the most effective technique for discouraging urban sprawl is to prepare and plan based on accurate population projections and thorough data and analysis. Plans should designate land for development based on the projected need. Need should be assessed for each category and type of land use, and development rights should be distributed reasonably based on that assessment . . . The greater the excess of land designated for development over the projected need, the greater the likelihood the local plan encourages urban sprawl."

- Florida Department of Community Affairs

The council believes that the urban service area should contain at least a five-year oversupply of urban land within each urban community to encourage a realistic scale of public and private planning, yet not make the urban service area so large that it undermines the economic benefits of a regional staging plan. The overage in needed land supply is also intended to temper increases in land prices attributable to a restricted supply."

- Metro Council, Twin Cities, Minneapolis

Even though communities refine their methods for determining available land supply, there will always be a certain degree of uncertainty inherent in making long-range growth projections and predicting market conditions. Communities have used several approaches to assure an adequate excess supply to account for this uncertainty and to allow for flexibility and choice throughout the planning horizon. A number of communities, including those in the Twin Cities metropolitan area in Minnesota and in Oregon, have requirements similar to Washington to provide adequate land supply for 10 or 20 years growth. These communities reevaluate land supply every five years and adjust to assure a continued five and 20-year supply, respectively. These particular communities have not experienced greatly increased housing costs compared to many other communities which lack growth management measures.

However, in areas which are experiencing very rapid growth, these provisions may not be enough. There is evidence that some communities have experienced increased land and housing costs which may be related to setting urban growth areas too tightly. Two approaches are recommended to assure that land supply is not restricted to the degree that it contributes to significantly higher housing costs:

-
- ◆ Continuously monitor land supply. Reevaluate and adjust land supply more frequently than required by Washington's GMA, possibly every one to three years. The more frequent check will increase your comfort level that supply estimates are on target or give you a chance to adjust if they're off. This system also avoids "running out" of excess supply toward the end of the 20-year period.
 - ◆ If you are unable to monitor supply on such a frequent basis, consider building in a safety factor of additional land beyond that needed to exactly accommodate the projected 20-year growth for your community. Chapin and Kaiser note that such a factor "allows for unanticipated choices of individuals and firms who may acquire land in excess of the anticipated need, and it allows for land which may be held out of use because of personal preferences or whims of a few property owners or because of legal complications which make the land unavailable for immediate development." However, they caution that the excess should not be more than 25 percent. Many Florida communities have built in such a factor. When community plans provide a residential land supply which is more than 25 percent of the area needed to accommodate projected growth, the Florida Department of Community Affairs reviews the plans more closely. Communities must demonstrate that other measures in the plan will adequately control sprawl or that existing conditions (such as extensive committed or vested lands) require the extra land supply before approving the plans.

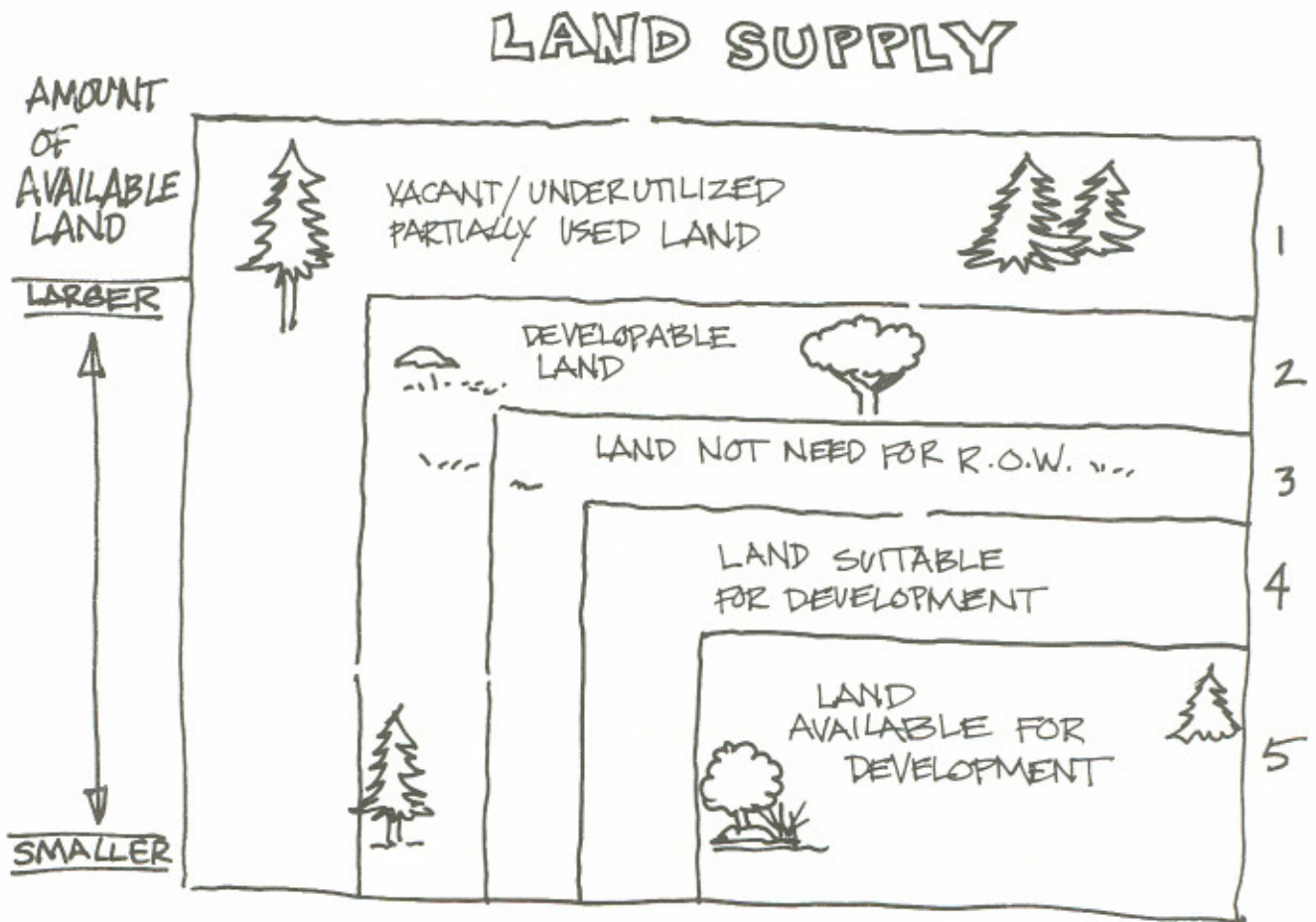
The advantage of the first approach, and danger of the second approach, is that it avoids providing too much supply which can contribute to sprawl development. Particularly important at the onset, regular monitoring can alert you to problems which need adjustment.

The advantage of the second approach is that it can guard against inadequate supply without the need for as frequent monitoring as the first approach. The goal should be to strike a balance which neither contributes to sprawl nor increases housing costs.

Additional Ground Rules to Assure that Land Supply Decisions Won't Inflate Housing Costs

- ◆ The key point to remember--limiting supply below demand tends to increase prices.
- ◆ Plan to provide an adequate supply of housing throughout the 20-year plan time frame.

- ◆ It is difficult to do successful growth management in isolation. If other nearby communities or planning areas do not have similar controls, they may experience increased development pressures. Therefore, it is important to coordinate your efforts with those of adjacent jurisdictions.
- ◆ The supply of land provided should match the needs of your particular population mix. For instance, if you limit the supply of land attractive to a particular income subgroup below its level of demand, such as the middle-income class, prices in this submarket can inflate significantly.
- ◆ To the extent that less information is available and greater uncertainty exists, build in a "safety" factor for adequate land supply.



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Concluding Remarks

A thorough analysis and understanding of vacant land supply is of key importance to the overall success of your community's growth management program. This guidebook provides some suggested steps for analyzing whether vacant land is developable, suitable, and available for future development to arrive at a more realistic picture of land supply. Understanding vacant land supply will allow you to design an urban growth boundary which accomplishes your growth management objectives while limiting undesirable side effects. It will allow you to strike the very delicate balance between too much urban land supply, which can produce sprawl, and too little land supply, which can contribute to higher housing costs and fewer housing options. Striking this balance will better assure long-term broad support for your community's growth management program.

DESIGNING URBAN GROWTH AREAS INVOLVES A DELICATE BALANCE



Too Much
Land Supply
Equals
Sprawl

Too Little
Land Supply
Equals Inflated
Land Cost

Glossary

Comprehensive Plan: A legal document adopted by local officials establishing policies that will guide the future physical development of the community. It will be used by local officials, planning commissions, private firms, and individuals when making decisions about land use development or changes, capital improvements programming, and the enactment of development regulations and related growth management legislation. Zoning and other development regulations must be consistent with the comprehensive plan. Periodic update and revision is required to assure that the plan adequately provides for growth, and reflects community desire and changed conditions.

Geographic Information Systems: Any system, manual or automated, capable of organizing, storing, analyzing, and retrieving geographically-related (mapped) information in a useful manner that supports sound decision-making regarding the management of a community's resources. Increasingly, the term is applied to computerized systems which combine computerized mapping with automated land use data files.

Infill Development: Development of vacant, skipped-over parcels of land in otherwise built-up areas. Local governments are showing increasing interest in infill development as a way of containing energy costs and limiting costs of extending infrastructure into newly developing areas. Infill development also provides an attractive alternative to new development by reducing loss of critical and resource lands to new development and by focusing on strengthening older neighborhoods.

Infrastructure: Streets, water and sewer lines and other public facilities basic and necessary to the functioning of an urban area.

Land Use Inventory: A study of how land is currently being used within the community. The study catalogs the types, extent, distribution, and intensity of the uses or activities found on parcels of land or in spaces within a building. For example, the land may be used for residential or commercial activity. Office, retail, and residential uses may all be found within different areas of the same building. Knowing what activities currently occur in different locations in a community and the relations between these different uses or activities is essential information for planning future land use.

Parcel: A continuous quantity of land, in single ownership or under single control, and usually considered a unit for the purposes of development.

Right-of-Way: A recorded right to use or travel over a specified property. The property can be an area or strip of land, public or private. Most commonly, it refers to land on which a street, sidewalk, or railroad is located. It can also be occupied by utilities, transmission lines, oil or gas pipelines, drainageways or similar facilities although pathways for these features are more commonly referred to as easements.

Urban Growth Areas: Areas which counties designate, in consultation with cities, where urban growth will be encouraged and supported with urban levels of services. The urban growth areas are to include areas and densities sufficient to permit the urban growth that is projected to occur in the county for the succeeding 20-year period. Urban growth refers to growth that makes intensive use of land for the location of buildings, structures, and impermeable surfaces to such a degree as to be incompatible with the primary use of such land for the protection of food, other agricultural products or fiber, or the extraction of mineral resources.

Urban Growth Boundaries: The boundary or line marking the limit between the urban growth areas and other areas such as rural and resource areas where urban growth is not encouraged, as designated by the county in consultation with cities, under the requirements of the GMA.

Urban Sprawl: Scattered, poorly planned urban development that occurs particularly in urban fringe and rural areas and frequently invades land important for environmental and natural resource protection. Urban sprawl typically manifests itself in one or more of the following patterns:

(1) leapfrog development (when new development is sites away from an existing urban area, bypassing vacant parcels located in or closer to the urban area that are suitable for development; (2) strip development (when large amounts of commercial, retail, and often multifamily residential development are located in a linear pattern along both sides of a major arterial and typically, accessing directly onto the arterial); and (3) large expanses of low density, single-type development.

Vesting: Property where landowners have the right to proceed with development. Washington land can be developed consistent with the building permit and subdivision regulations in effect at the time a "fully completed" application is submitted (RCW 19.27.095 and 58.17.033).

Appendix A: Density Provisions in Sensitive Areas

Excerpts from King County Sensitive Areas Ordinance.

zoning and subdivision examiner pursuant to K.C.C. 20.24.080 and K.C.C. 20.24.090.

SECTION 9. Resolution 25789, Section 2801 and K.C.C. 21.58.020 are each hereby amended to read as follows:

Required Showings For A Variance.

Before any variance may be granted, it shall be shown:

A. Because of special circumstances applicable to subject property, including size, shape, topography, location or surroundings, the strict application of the zoning code is found to deprive subject property of rights and privileges enjoyed by other properties in the vicinity and under identical zone classification ((+)). Provided, however, the fact that surrounding properties have been developed under regulations in force prior to the adoption of this ordinance shall not be the sole basis for the granting of a variance.

B. The granting of the variance will not be materially detrimental to the public welfare or injurious to the property or improvements in the vicinity and zone in which the property is situated ((-)), or contrary to the goals and purposes of the sensitive areas code as set out in K.C.C. Chapter 21.54.

C. In the case of sensitive areas as defined in K.C.C. Chapter 21.54, the variance granted shall be the minimum necessary to accommodate the permitted uses.

NEW SECTION. SECTION 10. There is hereby added to K.C.C. 21.54 a new section to read as follows:

Density credits.

A. For development proposals on lands containing stream and wetland buffers, steep slopes, landslide hazard areas or required buffers, King County shall determine allowable dwelling units for residential development proposals based on the formula below.

Percentage of site in buffers

and/or sensitive areas Density Credit

1 - 10% 100%

11 - 20% 90%

21 - 30% 80%

31 - 40% 70%

	41 - 50%	60%
2	51 - 60%	50%
3	61 - 70%	40%
4	71 - 80%	30%
5	81 - 90%	20%
6	91 - 99%	10%

7 B. The density credit can only be transferred within the
8 development proposal site. The applicant may reduce lot sizes
9 below the minimum required for that zone to accommodate the
10 transfer of density but it can not change the residential uses
11 permitted in the zone. Density credits within the A-R
12 classification shall be subject to the clustering provisions in
13 the A-R zone.

14 C. For development proposals on lands containing coal
15 mine, erosion, seismic, volcanic hazard areas, and flood hazard
16 areas, King County shall allow full credit for density for the
17 portions of the site occupied by these features.

18 D. For development proposals on lands containing
19 wetlands, and streams, King County shall only allow credit for
20 density for the area occupied by the stream and wetland buffers
21 and not the stream and wetland themselves.

22 NEW SECTION. SECTION 11. There is hereby added to
23 K.C.C. 21.54 a new section to read as follows:

24 Sensitive Areas Maps and Inventories.

25 A. The distribution of many environmentally sensitive
26 areas in western King County is displayed on maps in the
27 Sensitive Areas Map Folio. Many of the wetlands have been
28 inventoried and rated and that information is published in the
29 King County Wetlands Inventory Notebooks. Many flood hazard
30 areas are mapped by the Federal Insurance Administration in a
31 scientific and engineering report entitled "The Flood Insurance
32 Study for King County." These maps and the Inventory are
33 hereby adopted by reference. The actual presence or absence of
34 the features defined in K.C.C. Title 21 as sensitive areas, as
35 determined by King County, shall govern.

Appendix B: Land Use Code_____

City of Bellevue Land Use Code.

20.25H Sensitive Area Overlay District (Ord. 3775, 5-26-87, Section 18)

20.25H.010 Scope: This Part (20.25H) establishes special standards and procedures that apply to development on any site which is in whole or in part mapped or defined as a Sensitive Area in the City of Bellevue Sensitive Area Notebook. Any such development must be reviewed and approved pursuant to this Part in addition to being subject to all other relevant standards of the Bellevue City Code.

20.25H.020 Applicability: This Part applies to each application for development under the Land Use Code when the subject property is in whole or in part mapped or defined as a Sensitive Area in the City of Bellevue Sensitive Area Notebook. The procedures, standards and criteria apply only to that portion of the subject property which is determined to be a Sensitive Area.

20.25H.030 Purpose: The Sensitive Area Overlay District is a mechanism by which the City recognizes the existence of natural conditions which affect the use and development of property and imposes special regulations on the use and development of that property in order to protect environmentally sensitive areas and the public health, safety and welfare.

20.25H.040 Applicable Procedure:

- A. The Director of Design and Development, in consultation with the Director of the Storm and Surface Water Utility, shall review and decide upon each application for a use or development subject to this Part where the use is permitted by Section 20.10.440 or Section 20.25H.080, except as otherwise specified herein.
- B. If the use requires a Conditional or Administrative Conditional Use or requires a Planned Unit Development, the provisions of this Part will be applied through that review and a decision on such applications may be appealed as specified therein.
- C. All development, excluding detached dwelling units, in an R-10, R-15, R-20 or R-30 Land Use District requires Design Review (Part 20.30F).

20.25H.050 Who May Apply: The property owner may apply for approval of a use or development pursuant to this Part.

20.25H.060 Submittal Requirements:

- A. The Director of Design and Development shall specify the submittal requirements, including type, detail and number of copies, for a use or development application to be deemed complete and accepted for filing.
- B. The Director of Design and Development may waive specific submittal requirements determined to be unnecessary for review of an application.

20.25H.070 Designation and Restriction of Protected Area:

- A. **Designation:** Except as limited by in Paragraph 20.25H.070.B, the following areas are designated as Protected Areas for purposes of the Bellevue City Code:
 - 1. Areas of Special Flood Hazard (See 20.50.010), and
 - 2. Riparian Corridors excluding Type C (See 20.50.044), and
 - 3. Wetlands excluding Type C (See 20.50.054), and
 - 4. Areas of colluvial or landslide deposit on slopes of 15% or more, and
 - 5. Slopes of 40% or more.

- B. **Exception:** Areas of colluvial or landslide deposit on slopes of 15% or more and slopes of 40% or more may be deemed Buildable Areas. To apply for this exception, the applicant must –

1. Demonstrate compliance with all applicable standards and criteria of this Part, and
2. Provide a geotechnical and stability analysis as required by the City which indicates engineering design acceptable to the City, and
3. Provide other information necessary for the analysis as required by the Director of the Storm and Surface Water Utility.

If the Director of the Storm and Surface Water Utility determines that the applicant has demonstrated such compliance, Protected Area status and regulations no longer apply.

- C. **Protected Area Restriction:** No development, use or activity may occur in a Protected Area or a Protected Area setback except as specifically allowed by this Part 20.25H.

20.25H.080 Uses in Land Use Districts

- A. **General:** Subject to the restrictions of Paragraph 20.25H.080.B, the uses established by Section 20.10.440 for the applicable Land Use District may be undertaken in the Sensitive Area Overlay District as provided for in that Section.

- B. **Protected Area Uses:** Only the following uses may be located within a Protected Area designated by Section 20.25H.070 or Protected Area setback required by Section 20.25H.090, regardless of the provisions of Section 20.10.440. Each use is subject to the applicable performance standards of Section 20.25H.110 and the specified permit requirements of this Paragraph:

- | | |
|--|---------|
| 1. Communication Broadcast and Relay Tower/Microwave | C |
| 2. Botanical gardens | C |
| 3. Camping sites/day camp | A |
| 4. Parks, public | C |
| private | C |
| 5. Agriculture | P |
| 6. Horticulture | P |
| 7. Tree Farm | C |
| 8. Fish hatchery, aquaculture | C |
| 9. Accessory sales of items produced on site | P |
| 10. City of Bellevue Utility Facility | C(1) |
| 11. Any other Utility Facility | C(1) |
| 12. Local Utility System | P(1) |
| 13. Regional Utility System | C(1)(2) |
| 14. Right-of-Way | P(1) |

P = Permitted Use

A = Administrative Conditional Use. See Part 20.30E

C = Conditional Use. See Parts 20.30B/20.30C

(1) Must constitute an Essential Public Utility defined by Section 20.50.018.

20.25H.085 Provisions for existing development

- A. **General:** All residential and commercial development located in Riparian Corridors and in existence or for which the development rights are vested on the effective date of this ordinance is conforming as to the use requirements in Section 20.25H.080 and the setback requirements in Section 20.25H.090.B.3 and is not subject to the nonconforming provisions of Section 20.20.560 with respect to use and setback requirements.

1. **Residential Development:** A residential development described in Paragraph A. may be expanded into a Protected Area or a Protected Area Setback required by Section 20.25H.090 through Process III. This section allows only one expansion and limits that expansion to a 20% increase of total square footage.
 2. **Commercial Development:** No commercial development may expand into a Protected Area or Protected Area Setback required by Section 20.25H.090. Any commercial reconstruction or vertical expansion in Protected Areas or Protected Area Setbacks must meet the restoration provisions in Storm Drainage Development Standards Section 2B-04.
- B. **Hold Harmless:** Property owners who submit development applications to the City for expansion or reconstruction in a Protected Area or Protected Area Setback shall execute a hold harmless agreement in a form approved by the City Attorney which releases the City from liability for any damage arising from the location of improvements within the Protected Area or Protected Area Setback.

20.25H.090 Dimensional Requirements

- A. **General:** The requirements of this Section apply along with any other dimensional requirements of the Land Use Code (see 20.20.010, 20.20.020, 20.20.130, 20.20.190, 20.25A-G). The most restrictive dimension controls.
- B. **Minimum Setback of Structures and Land Alteration:**
1. **General:** Any structure and any land alteration must be setback as required by Paragraphs 20.25H.090.B.2 through B.5; provided, however, that the setback of Paragraph 20.25H.090.B.3 applies only to structures. Setbacks are required in order to –
 - a. Minimize long-term impacts of development adjacent to Sensitive Areas, and
 - b. Protect Sensitive Areas from adverse impacts during construction, and
 - c. Preserve the edge adjacent to the Sensitive Area for its habitat value, or
 - d. Prevent loading of potentially unstable slope formations.

Provided; however, that land alteration for necessary access, supplemental planting and approved land uses (20.25H.080) is permitted.
 2. **Wetlands as defined in Section 20.50.054:**
 - a. **Type A:** 50' from the wetland boundary determined pursuant to the City of Bellevue Sensitive Area Notebook.
 - b. **Type B:** 25' from the wetland boundary determined pursuant to the City of Bellevue Sensitive Area Notebook.
 3. **Riparian Corridor as defined in Section 20.50.044:**
 - a. **Type A:** 20' from the Corridor boundary determined pursuant to the City of Bellevue Sensitive Area Notebook.
 - b. **Type B:** 10' from the Corridor boundary determined pursuant to the City of Bellevue Sensitive Area Notebook.
 - c. **Type C:** 15' from the Corridor boundary determined pursuant to the City of Bellevue Sensitive Area Notebook.

Provided; however, that the setback required by Paragraph 20.25H.090.B.3 applies only to structures and not to other land alteration.

- d. **Riparian Corridor Setback Modification:** The Director of Design and Development and the Director of the Storm and Surface Water Utility may waive or modify the Riparian Corridor setback of Paragraph B.3 if the applicant demonstrates that –

- i. Water quality will not be adversely affected, and
- ii. Riparian Corridor vegetation will be maintained in a healthy condition. Solar access to vegetation must be maintained at least 50% of daylight hours during the normal growing season.

4. **Slopes:**

a. **Top of Slope:**

- i. 50' from top of a slope designated as a Protected Area by Section 20.25H.070 and having a grade difference from top to bottom of at least 10'.
- ii. 25' from the top of a slope which is not a Protected Area and which is greater than 15%.

- b. **Toe of Slope:** 75' from toe of a slope where historic or potential mass slope movement occurs as determined by the Director of the Storm and Surface Water Utility.

- c. **Measurement:** The distance from the top of a slope or the toe of a slope is measured as specified by the City of Bellevue Development Standards.

- d. **Slope Setback Modification:** The Director of Design and Development and the Director of the Storm and Surface Water Utility may waive or modify the slope setback of Paragraph B.4 if the applicant demonstrates that–

- i. The proposed construction method will, as demonstrated in the required geotechnical analysis, improve or not adversely impact the stability of the slope and reduce erosion potential, and
- ii. The proposal uses construction techniques which minimize disruption of the existing topography and vegetation, and
- iii. The proposal adequately addresses the existing geological constraints of the site including soils and hydrology.

5. **Area of Special Flood Hazard Extension:** Any setback required by Paragraphs 20.25H.090.B.1-3 is increased to the edge of the Area of Special Flood Hazard (20.50.010) if the requirements of those Paragraphs otherwise result in a lesser setback.

6. **Setback Adjustment Process:** When the combination of opposite setback requirements for structures and land alteration pursuant to the Land Use Code equals more than 50% of the property dimension which includes those setbacks and when a Sensitive Area setback required by this Part is required in that determination, the Director of Design and Development may adjust setback requirements as follows:

- a. When a side setback and a Sensitive Area Setback are combined, the side setback may be reduced to a figure equal to the perimeter landscape development requirement of Section 20.20.520 but in no case less than 5'.

- b. When a rear setback and a Sensitive Area Setback are combined, the rear setback may be reduced to a figure equal to the perimeter landscape development requirement of Section 20.20.520 but not less than 10' unless a lower requirement exists in Section 20.20.010.
- c. When a front setback and a Sensitive Area Setback are combined, the front setback may be reduced to 20' or to the minimum setback required by Section 20.20.010 if less than 20'.
- d. When any other setback requirement of this Code is combined with a Sensitive Area Setback, that other setback may be reduced to 5'.
- e. A setback adjustment beyond that authorized in Paragraph 20.25H.090.B.6 will be processed as a variance pursuant to Part 20.30G or 20.30H but in no case may a variance to the setback requirements of Paragraph 20.25H.090.B.1-5 be approved, except pursuant to the provisions of Part 20.30.P., relating to Protected Area Development Exceptions.

- C. **Transition Area:** Development on sites within the Sensitive Area Overlay District which contain areas designated as protected areas are exempt from the provisions of Part 20.25B.

(Ord. 4130, 3-12-90, Section 6)

20.25H.100 Density/Intensity Calculation:

- A. **General:** Except as provided for Protected Areas in this Section, the number of dwelling units per acre and the maximum floor area ratio for office space pursuant to Section 20.20.020 apply to a Sensitive Area.
- B. **Dwelling Units per Acre:** The maximum number of dwelling units per acre for a site which contains a Protected Area designated by Section 20.25H.070 is equal to the dwelling units per acre as specified in Section 20.20.010 times the Buildable Area in acres plus the dwelling units per acre times the Protected Area in acres times the Development Factor derived from Paragraph 20.25H.100.D:

$[(DU/ACRE)(BUILDABLE AREA)] + [(DU/ACRE)(PROTECTED AREA)(DEVELOPMENT FACTOR)] = \text{MAXIMUM DWELLING UNIT POTENTIAL}$

- C. **Floor Area Ratio for Office Space:**

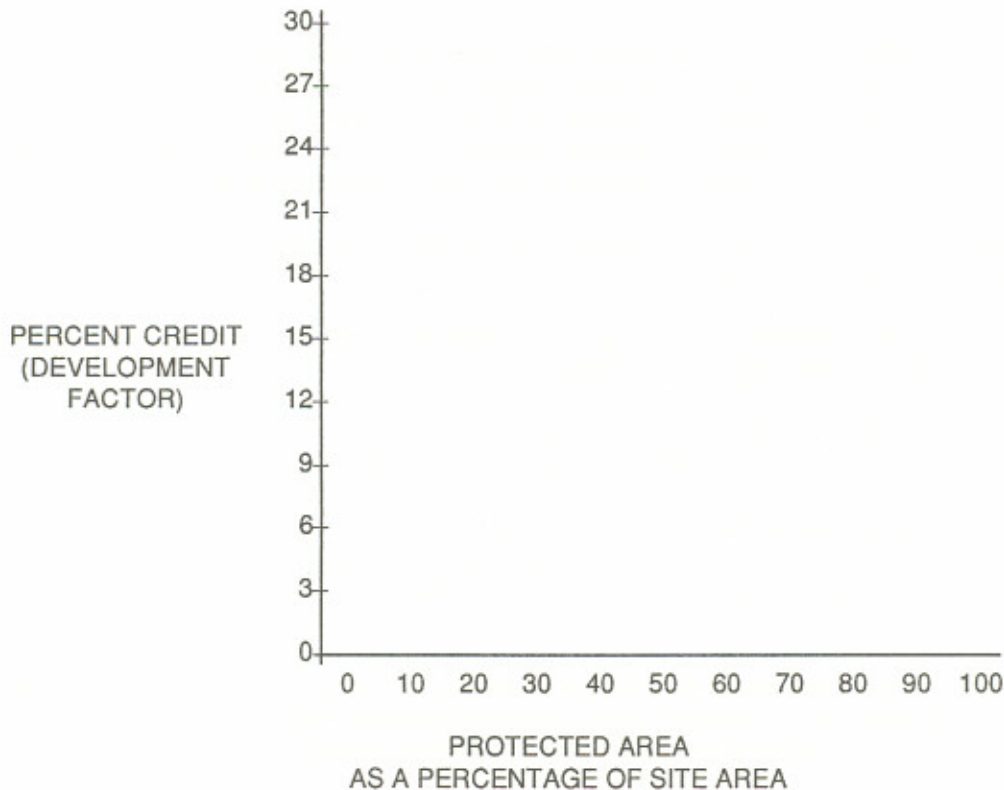
- 1. The maximum allowable office floor area for a site which contains a Protected Area designated by Section 20.25H.070 is equal to 0.5 times the Buildable Area plus 0.5 times the Protected Area times the Development Factor derived from Paragraph 20.25H.100.D:

$0.5 \times \text{BUILDABLE AREA} +$
 $0.5 \times (\text{PROTECTED AREA} \times \text{DEVELOPMENT FACTOR}) =$
 MAXIMUM OFFICE DEVELOPMENT POTENTIAL

- 2. A property which contains a Protected Area designated by Section 20.25H.070 is exempt from the sliding scale FAR requirement of Land Use Code 20.20.010, Footnote 9 (Notes: Uses in Land Use Districts—Dimensional Requirements). The applicable maximum Floor Area Ratio to the Buildable Area is 0.5 regardless of building square footage.

- D. **Development Factor:** The development factor, consisting of a "percent credit", to be used in computing the number of dwelling units per acre or the maximum allowable office floor area for a Protected Area designated by Section 20.25H.070 is derived from the following table:

ON-SITE DENSITY CREDIT DEVELOPMENT FACTOR



20.25H.110 Performance Standards for Sensitive Areas:

A. Area of Special Flood Hazard

1. **Restricted Use and Development:** No use, development or activity may occur in an Area of Special Flood Hazard except as specifically allowed by Part 20.25H. All use, development or activity which is allowed is subject to the performance standards of Paragraph 20.25H.110.A No alteration of the flood carrying capacity, configuration or volume of the Area of Special Flood Hazard is permitted except as specifically permitted by Part 20.25H.
2. **Existing Development Declared Legal Nonconforming:** All development within the Area of Special Flood Hazard (20.50.010) constructed or for which a vested building permit application exists prior to the effective date of Part 20.25H and which fails to comply with the requirements of Part 20.25H is legal nonconforming development. Any change to a legal nonconforming development is subject to the performance standards of Paragraph 20.25H.110.A.
3. **Review Required:**
 - a. In order to assure that proposed development will be safe from flooding, the Director of the Storm and Surface Water Utility, the Director of Design and Development and the Fire Marshall shall review and must approve, approve with conditions or deny new development under Part 20.25H and the substantial improvement of existing development within the Area of Special Flood Hazard. The Director of the Storm and Surface Water Utility shall determine that all necessary permits have been obtained from federal, state, or local agencies prior to approval.

- b. The Director of Design and Development shall obtain and transmit to the Director of the Storm and Surface Water Utility the elevation in relation to mean sea level of the lowest habitable floor including basement, of a new or substantially improved structure permitted by this Part.
 - c. The Director of Public Works and Utilities shall review and must approve all plans and specifications for new or replacement water and sanitary sewage systems permitted by Part 20.25H to assure compliance with the regulations of this Part and to assure that all necessary permits have been received from those governmental agencies from which approval is required by federal or state law or agency regulation.
4. **Definitions:** The following definitions apply to the Area of Special Flood Hazard regulated under Paragraph 20.25H.110.A:
- a. **Flood or Flooding:** A general and temporary condition of partial or complete inundation of normally dry land areas from—
 - i. The overflow of inland or tidal waters; or
 - ii. The unusual and rapid accumulation or runoff of surface waters from any source.
 - b. **Flood Insurance Rate Map:** The map delineating special flood hazard areas effective December, 1978, that was prepared by the Federal Insurance Administration for the City or as subsequently revised by the Federal Emergency Management Agency.
 - c. **Floodproofing:** Any combination of structural and nonstructural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, structures and their contents.
 - d. **Habitable Floor:** Any floor usable for living purposes, which includes working, sleeping, eating, cooking or recreation, or a combination thereof. A floor used only for storage purposes is not a "habitable floor."
 - e. **One Hundred-Year Flood:** The flood having a one percent chance of being equaled or exceeded in any given year as determined by customary methods of statistical analyses defined in the Storm and Surface Water Utility Code (Bellevue City Code 24.06).
 - f. **Structure:** A walled and roofed building, including a gas or liquid storage tank, that is principally above ground, as well as a mobile home.
 - g. **Substantial Improvement:** Any repair, reconstruction, or improvement of a structure, the cost of which equals or exceeds fifty percent of the assessed value of the structure either, (1) before the improvement or repair is started, or (2) if the structure has been damaged, and is being restored, before the damage occurred. For the purpose of this definition, "substantial improvement" is considered to occur when the first alteration of any wall, ceiling, floor or other structural part of the building commences whether or not that alteration affects the external dimensions of the structure. The term does not, however, include either (1) any project for improvement of a structure to comply with existing state or local health, sanitary, or safety code specifications which are solely necessary to assure safe living conditions or (2) any alteration of a structure listed on the National Register of Historic Places.

5. **Intrusion Allowed:** In addition to the uses and activity permitted by Section 20.25H.080, any structure may intrude over the Area of Special Flood Hazard if –

- a. The intrusion is located above existing grade, does not alter configuration of the Area of Special Flood Hazard; and
- b. The intrusion is at an elevation and orientation which maintains the existing vegetation of the Area of Special Flood Hazard in a healthy condition. Solar access to vegetation must be maintained at least 50% of daylight hours during the normal growing season.

No pile supported or other structural element may be located in the Area of Special Flood Hazard except as required for those uses and activities permitted by Section 20.25H.080.

6. **Construction Standards:**

- a. Within the Area of Special Flood Hazard, any new development permitted by Part 20.25H and any substantial improvement of existing development which is permitted must –
 - i. Be designed and adequately anchored to prevent flotation, collapse or lateral movement of the structure; and
 - ii. Be constructed with materials and utility equipment resistant to flood damage; and
 - iii. Be constructed by methods and practices that minimize flood damage; and
 - iv. Be constructed by methods and practices that minimize disturbance of the Area of Special Flood Hazard and retain its natural character; and
 - v. Be designed and constructed so that electrical heating, ventilation, plumbing and air conditioning equipment and other services are elevated or otherwise located to prevent water from entering or accumulating within the components during conditions of flooding; and
 - vi. Be elevated at least two feet above existing grade where floodplain data or other reliable historical flooding elevations are not available. Adequacy of historical data shall be determined by the Director of the Storm and Surface Water Utility; and
 - vii. The cumulative effect of any proposed development adjacent to, or encroaching within the Area of Special Flood Hazard, when combined with all other existing and proposed development, may not increase the water surface elevation of the base flood.
- b. Residential Construction.
 - i. The substantial improvement of an existing residential structure must result in the lowest floor (including basement) elevation being at or above the elevation of the one hundred-year flood; and
 - ii. Fully enclosed areas below the lowest floor that are subject to flooding are prohibited, unless they are designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or must meet or exceed the following minimum criteria:

- (1) A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed flood area subject to flooding must be provided; and
- (2) The bottom of all openings may be no higher than one foot above grade; and
- (3) Openings may be equipped with screens, louvers, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.

c. Nonresidential Construction.

- i. New development permitted by Part 20.25H or the substantial improvement of an existing nonresidential structure must –
 - (1) Result in the lowest floor (including basement) elevation being at or above the elevation of the one hundred-year flood; or
 - (2) Together with attendant utility and sanitary facilities, be designed so that below the elevation of the one hundred-year flood the structure is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. Minimum floodproofing standards are contained within Sections 210.2.1 and 210.2.2 of the U.S. Army Corps of Engineers publication entitled "Floodproofing Regulations," June 1972. Additionally, no perceptible change in the flood elevation upstream or downstream may occur and no change in the quantity, quality or velocity of flow leaving the site may occur; and
- ii. Where floodproofing is utilized for a nonresidential structure, a registered professional engineer or architect shall certify that the floodproofing methods are adequate to withstand the flood depths, pressures, velocities, impact and uplift forces and other factors associated with the one-hundred-year flood; and
- iii. Nonresidential structures that are elevated, and not floodproofed, must meet the same standards for space below the lowest floor as set forth in 20.25H.110.A.4.b.ii; and
- iv. Applicants floodproofing nonresidential buildings shall be notified by the Director of the Storm and Surface Water Utility that flood insurance premiums will be based on rates that are one foot below the floodproofed level (e.g. a building constructed to the base flood level will be rated as one foot below that level).

7. Roads and Utilities:

- a. The Director of the Storm and Surface Water Utility must approve road and utility crossings within the Area of Special Flood Hazard and must find that the utility facility, system or road is an essential public utility, and that a crossing will provide essential public access or service which cannot be made feasibly in a location which is not an Area of Special Flood Hazard. The crossing must be by bridging the Area of Special Flood Hazard and designed for shared road and utility facilities in order to minimize adverse impacts. No more than one crossing may occur on a site unless required for safe emergency access; and

- b. All new and replacement water supply systems must be essential public utilities and designed to minimize or eliminate infiltration or exfiltration of floodwaters into the systems; and
- c. All new and replacement sanitary sewage systems must be essential public utilities and designed to minimize or eliminate infiltration or exfiltration of floodwaters into the systems and discharges from the systems into floodwaters; and
- d. All on-site waste disposal systems must be essential public utilities and located to avoid impairment to them or contamination from them during flooding.

8. Subdivisions and Other Proposed New Developments

- a. All plat and short plat proposals and other proposed new development must:
 - i. Be consistent with the need to minimize flood damage; and
 - ii. Provide for the location and construction of public utilities and facilities, such as sewer, gas, electrical, and water systems, so as to minimize flood damage; and
 - iii. Provide adequate drainage to reduce exposure to flood hazards.
- b. All plat and short plat proposals and other new development proposals must provide one hundred-year flood elevation data.

9. Agricultural Uses:

- a. Erosion control measures, such as crop rotation, mulching, strip cropping and contour cultivation must be used in conformance with guidelines and standards established by the Soil Conservation Service, U.S. Department of Agriculture; and
- b. Areas of Special Flood Hazard must be protected from significant impacts of agricultural chemicals and pesticides as required by the Storm and Surface Water Utility Code (Bellevue City Code 24.06.085) and must meet the water quality standards of Paragraph 24.06.060.9.

B. Wetlands:

- 1. **Restricted Use and Development:** No use, development or activity may occur in a wetland except as specifically allowed by Part 20.25H. All use, development or activity which is allowed is subject to the Performance Standards of Paragraph 20.25H.110.B.
- 2. **Agricultural Uses:**
 - a. Erosion control measures, such as crop rotation, mulching, strip cropping and contour cultivation must be used in conformance with guidelines and standards established by the Soil Conservation Service, U.S. Department of Agriculture; and
 - b. Wetland areas must be protected from significant impacts of agricultural chemicals and pesticides as required by the Storm and Surface Water Utility Code (Bellevue City Code 24.06.085) and must meet the water quality standards of Paragraph 24.06.060.9.

3. Aquaculture Uses:

- a. Aquaculture development must be conducted in a way which does not adversely affect the aesthetic or environmental quality of the wetland and interrelated stream habitat; and
- b. Aquaculture must to the extent feasible use underwater structures for fish rearing facilities.

4. Essential Public Utilities:

- a. Essential public utilities must be constructed to minimize or where possible avoid wetland disturbance; and
- b. All construction must be designed to protect the wetland against erosion, uncontrolled drainage, restriction of groundwater movement, slides, pollution, aesthetic loss, habitat disturbance, excessive excavation or fill detrimental to the environment; and
- c. Upon completion of installation of essential public utilities, wetlands must be restored to pre-project configuration, replanted as required by the Clearing and Grading Code and provided with maintenance care until newly planted vegetation is established; and
- d. All crossings must be designed for shared facilities in order to minimize adverse impacts and reduce the number of crossings.

5. Roads:

- a. Essential public roads must be designed and maintained to prevent erosion and not restrict the natural movement of groundwater; and
- b. Essential public roads must be located to conform to the topography so that minimum alteration of natural conditions is necessary. The number of crossings is limited to those necessary to provide essential public access; and
- c. Essential public roads must be constructed in a way which does not adversely affect the aesthetic and hydrologic quality of the wetland and interrelated stream habitat. Where feasible, crossings must be by bridging the wetland and must allow for combination with other essential public utilities; and
- d. Upon completion of construction, the area affected must be restored to an appropriate grade, replanted as required by the Clearing and Grading Code and provided with maintenance care until newly planted vegetation is established.

6. Public Use and Access:

- a. Public access must be located in areas which have the lowest sensitivity to human disturbance or alteration; and
- b. Public access must be specifically developed for interpretive, educational or research purposes by, or in cooperation with, the City or as part of the adopted non-motorized trail linkage program; and
- c. No interpretive center may be constructed in a wetland of less than 150 acres. Additionally, an interpretive center must be located in either that portion of a wetland which is degraded or in an intermittent wetland having the lowest sensitivity to human disturbance or alteration; and

- d. No motorized vehicle is allowed within a wetland or its setback required by Section 20.25H.090 except as required for necessary maintenance, agricultural management or security; and
- e. Any public access or interpretive facility developed in a wetland must, to the extent possible, be connected with a park, recreation or open-space area; and
- f. Vegetative edges, structural barriers, signs or other measures must be provided wherever necessary to protect Sensitive Areas by limiting access to designated public use or interpretive areas; and
- g. Access trails must incorporate design features and materials which protect water quality and allow adequate surface and ground water movement; and
- h. Consolidated area for nesting, breeding, and rearing must be preserved in the wetland area and its setback required by Section 20.25H.090 to protect sensitive plant and wildlife species; and
- i. Dredging or filling within a wetland may occur only for the following purposes:
 - i. Maintenance of an existing water body, or
 - ii. Enhancement or restoration of habitat in conformance with City of Bellevue standards adopted by the Director of Design and Development and the Director of the Storm and Surface Water Utility, or
 - iii. Natural system interpretation, education or research when undertaken by, or in cooperation with, the City, or
 - iv. Flood control or water quality enhancement by the City of Bellevue.

C. Riparian Corridors:

- 1. **Restricted Use and Development:** No use, development or activity may occur in a Riparian Corridor or Riparian Corridor setback except as specifically allowed by Part 20.25H. All use, development or activity which is allowed is subject to the Performance Standards of Paragraph 20.25H.110.C.
- 2. **Essential Public Utilities:**
 - a. Essential public utilities must be constructed to minimize and where possible avoid Riparian Corridor disturbance; and
 - b. All construction must be designed to protect the Riparian Corridor against erosion, uncontrolled drainage, slides, pollution, aesthetic loss, habitat disturbance, excessive excavation or fill detrimental to the environment; and
 - c. Upon completion of installation of essential public utilities, the Riparian Corridor must be restored to pre-project configuration, replanted with native species and provided with maintenance care until newly planted vegetation is established; and
 - d. All crossings must be designed for shared facilities in order to minimize adverse impacts and reduce the number of crossings.

3. Roads:

- a. Essential public roads must be designed and maintained to prevent erosion and not restrict the natural movement of groundwater; and
- b. Essential public roads must be located to conform to the topography so that minimum alteration of natural conditions is necessary. The number of crossings is limited to these necessary to provide essential public access; and
- c. Essential public roads must be constructed in a way which does not adversely affect the aesthetic and hydrologic quality of the wetland and interrelated stream habitat. Where feasible, crossings must be by bridging the wetland and must allow for combination with other essential public utilities; and
- d. Upon completion of construction, the area affected must be restored to an appropriate grade, replanted as required by the Clearing and Grading Code and provided with maintenance care until newly planted vegetation is established.

4. Public Use and Access:

- a. Public access must be located in areas which have the lowest sensitivity to human disturbance or alteration; and
- b. Public access must be specifically developed for interpretive, educational or research purposes by, or in cooperation with, the City or as part of the adopted non-motorized trail linkage program; and
- c. No motorized vehicle is allowed within a Riparian Corridor or its setback required by Section 20.25H.090 except as required for necessary maintenance, agricultural management or security or as part of an approved recreational activity; and
- d. Any public access or interpretive facility developed in a Riparian Corridor must, to the extent possible, be connected with a park, recreation or open-space area; and
- e. Vegetative edges, structural barriers, signs or other measures must be provided where necessary to protect Sensitive Areas by limiting access to designated public use or interpretive areas; and
- f. Access trails must incorporate design features which protect water quality and allow adequate surface and ground water movement; and
- g. Consolidated area for nesting, breeding and rearing must be reserved in the riparian corridor area and its setback required by Section 20.25H.090 to protect sensitive plant and wildlife species; and
- h. Dredging or filling within a Riparian Corridor may occur only for the following purposes:
 - i. Maintenance of an existing corridor, or
 - ii. Enhancement or restoration of habitat in conformance with City of Bellevue standards adopted by the Director of Design and Development and the Director of the Storm and Surface Water Utility, or
 - iii. Natural system interpretation, education or research when undertaken by or in cooperation with the City, or
 - iv. Flood control or water quality enhancement by the City of Bellevue.

- D. **Sensitive Earth Conditions:** The provisions of Paragraph 20.25H.110.D apply to each use or development on property including a slope equal to or greater than 15%.

1. **Disturbance Limitations.**

- a. **Basic Requirement:** Development on property including a slope equal to or greater than 15% must:
- i. Consolidate all areas of disturbance on the areas of least slope, and
 - ii. Minimize changes in grade, cleared area and volume of cut or fill on the site, and
 - iii. Comply with a limitation on disturbance of the subject property calculated as set forth in the following chart.

Slope Categories	Percent Disturbance Allowed
40% and greater	30%
25 to 40%	45%
15 to 25%	60%

Slope Disturbance Allowed

Disturbance Chart

(sq. ft. of site 0-15% slope) x 100% +
 (sq. ft. of site 15-25% slope) x 60% +
 (sq. ft. of site 25-40% slope) x 45% +
 (sq. ft. of site 40% plus slope) x 30% =

Total amount of disturbance on site allowed

- b. **Alternative Review:** The applicant may propose a development plan which does not comply with the basic requirement of Paragraph 1.a. The Director of Design and Development and the Director of the Storm and Surface Water Utility may approve such a plan if –
- i. The increase in disturbance on a specific slope is necessary to preserve a significant environmental feature of the site, such as but not limited to an area of vegetation valuable for habitat or aesthetic reasons, a ridgeline which constitutes an areawide visual amenity or a view from a public park, and
 - ii. The development is consolidated resulting in the least amount of coverage by buildings and other impervious surface feasible, and
 - iii. The increased disturbance or cut and fill will not result in greater erosion than that which would otherwise occur and proposed erosion control measures are practically and readily maintainable.

2. Location

- a. Development must be located to minimize disturbance and removal of vegetation; and
- b. Structures must be clustered to retain as much open space as possible and the natural topographic character of the slope; and
- c. Structures must conform to the natural contour of the slope. The foundation must be tiered to conform to the existing topography of the site; and
- d. Development must be located so as to preserve the most sensitive portion of the site and its natural landforms or to protect vistas from public spaces.

3. Design

- a. Development must minimize the footprint of buildings and other disturbed areas. The least number of buildings is desirable in order to consolidate the development; and
- b. Development must retain consolidated areas of natural vegetation; and
- c. Development must be designed with a foundation type that is compatible with existing slope conditions and that minimizes topographic modification. Where feasible, earth retention measures should be incorporated into the structure; and
- d. Standard prepared building pads, i.e., slab on grade, resulting in grading more than 10' outside the building footprint area are prohibited; and
- e. Development must be designed to minimize the amount of impervious surface; and
- f. Use of common access drives and utility corridors is required where feasible; and
- g. Development must be designed to minimize lot coverage and must, with the exception of detached single family structures, incorporate under - structure parking and multi-level structures where permitted; and
- h. Roads, walkways and parking areas must be designed parallel to contours with consideration to maintaining consolidated areas of natural topography and vegetation. Access must be located in the least sensitive area feasible; and
- i. Use of retaining walls which allow the maintenance of existing natural slope areas is preferred over graded artificial slopes.

4. Construction Types

- a. Use of foundation walls as retaining walls is preferable to rock or concrete walls built separately and away from the building. Freestanding retaining devices are only permitted when they cannot be designed as structural elements of the building foundation; and
- b. Use of pole-type construction which conforms to the existing topography is required where feasible. The structure must be tiered to conform to the existing topography and to minimize topographic modification; and
- c. Change in grade, cleared area and volume of cut or fill on the site must be minimized; and

- d. Piled deck support structures are preferred for parking or garages over fill-based construction types.

20.25H.120 Recording Required: The property owner receiving approval of a use or development pursuant to this Part shall record a site plan clearly delineating the Protected Area designated by Section 20.25H.070 with the King County Division of Records and Elections and with the Bellevue City Clerk. The site plan must include a statement that the provisions of this Part as now or hereafter amended control use and development of the subject property.

20.25H.130 Assurance Device: In appropriate circumstances, the City may require a performance or maintenance assurance device in conformance with Section 20.40.490 to assure compliance with the provisions of this Part and adequate protection of a Sensitive Area designated by the City of Bellevue Sensitive Area Notebook.

20.25H.140 Protected Area Development Exception: If more than 90% of a property is within a Protected Area designated by Section 20.25H.070 or within a Protected Area setback required by Section 20.25H.090, and if no use listed in Paragraph 20.25H.080.B constitutes a reasonable potential use of the property; the property owner may request a Protected Area Development Exception pursuant to Part 20.30P.

Appendix C: Sample Questions for Survey of Landowners

Gruen Gruen and Associates, in their 1982 study of residential development in Stockton, California, conducted a survey of landowner intentions which can act as a model for government interest in such surveys. Questions were asked of landowners to determine whether vacant land was available for development and included the following:

- ◆ What are your major reasons or motives for holding the land?
- ◆ Is real estate your primary business?
- ◆ Have any previous proposals for development of this site fallen through?
- ◆ At present, can this property be considered available for development?
- ◆ If it is not available now, are you willing to seriously consider a sale or lease within five years?
- ◆ Why do you think the property is not likely to be put on the market or developed in the near future?
- ◆ Would any of the following effect your decision to develop or your development timetable? (options include change in market conditions, change in planning or zoning policies, and improved financing climate)
- ◆ What would you have been willing to sell or lease the property for?

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Appendix D: Resources

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